



Microsoft®
SQL Server® 2008

Section 2

Your Data, Any Place,
Any Time

What Are System-Supplied Data Types?

Category		Data types
Numeric	Integer	int, bigint, smallint, tinyint
	Exact	decimal, numeric
	Approximate	float, real
	Monetary	money, smallmoney
Date and time		datetime, smalldatetime
Character	Non-Unicode	char, varchar, varchar(max), text
	Unicode	nchar, nvarchar, nvarchar(max), ntext
Binary		binary, varbinary, varbinary(max)
Image		image
Global identifier		uniqueidentifier
XML		xml
Special		bit, cursor, timestamp, sysname, table, sql_variant

Basic Domain Types

- ❑ Char(n) A fixed length character string with user-specified length n
- ❑ Varchar(n) A variable-length character string with user-specified maximum length n
- ❑ Int An integer
- ❑ Smallint A small integer
- ❑ Numeric(p,d) A fixed-point number with user-specified precision. The number consists of p digits plus a sign and d of the p digits after decimal point
- ❑ Real, double precision Floating-point and double-floating point numbers
- ❑ Float(n) A floating-point number with precision of at least n digits

Identity Column

- ❑ If a column is marked as identity column, then the values for this columns are automatically generated when you insert new row into the table.

```
Create table tbl_depts  
(  
  d_id int identity(1,1) primary key  
  d_name nvarchar(50)  
)
```

➤ Note that seed and increment are optional

- ❑ To explicit supply a value for identity column

- Turn on identity insert: SET identity_insert tbl_depts on
- Insert statement with full column list.

- ❑ If you deleted all rows from table and want to rest the identity column

```
DBCC CHECKIDENT('tbl_depts',Reseed,0)
```

Cascading referential integrity constraint

❑ Cascading referential integrity constraint

- Allows to define the actions Ms Sql Server should take when a user attempts to **delete** or **update** a key to which an existing foreign keys points.
- Actions can be:
 - No Action.
 - Cascade.
 - Set Null.
 - Set Default.

Alter Table (Columns)

❑ Adding column to table:

- The new column will be added with NULL values for all rows currently in table.

```
alter table emp  
add (tel_number number(11) );
```

❑ Modifying Column Definitions

- To change datatype, size, default value and NOT NULL column constraint of a column definition.

```
alter table emp  
Alter column tel_number number(13) ;
```

❑ Drop Column

- Deleting column including all data in that column.

```
alter table emp  
Drop column tel_number;
```

Drop table

❑ **DROP Table Command**

- Removes a table from the database .

```
Drop table emp;
```

❑ **TRUNCATE table command**

- Removes all rows from a table .

```
Truncate table emp;
```

Assignment

- ❑ Create database named “faculty_db” that is made up of several relations as follows :
 - STUDENT (RegNum, Name,email, Dept, Grade)
 - COURSE (Code, Title, Tutor)
 - EXAMS (Student, Course,Grade) --Grade from A to D
 - DEPTS(Id,Name,Director)
 - STAFF(ID,Name,Dept,email,Position)

Arithmetic Operators

Description	Operator	Example
Addition	+	$20 + 45$
Subtraction	-	$4576 - 233$
Multiplication	*	$23 * 67$
Division	/	$56 / 3$

Relational / Comparison Operators

Description	Operator	Example
Equals	=	Quantity = 12
Greater than	>	Quantity > 12
Greater than or equal to	>=	Quantity >= 12
Less than	<	Quantity < 12
Less than or equal to	<=	Quantity <= 12
Not equal to	<> !=	Quantity <> 12 Quantity != 12
Not less than	!<	Quantity !< 12
Not grater than	!>	Quantity !> 12

Boolean / Logical Operators

Description	Operator	Example
And	And	Marks ≥ 50 and marks ≤ 80
Or	Or	Deptno = 10 or deptno = 20
Not	Not	Not dept = 10

Commands in sql

❑ Data Definition language

- Create
- Alter
- Drop

❑ Data Manipulation Language

- Insert
- Delete
- update

❑ Data control Language

- Grant
- revoke

Insert table

❑ Inserting Data into Table

```
insert into dbo.tbl_depts  
values(4,'civil')
```

- **Note:** *the order of values matches the order of columns in the table.*

```
insert into dbo.tbl_depts  
(d_name, d_id)values('Math',5);
```

- **Note:** *the columns not listed in the insert into command will have their default values or null values.*

Update table

□ Update Command

- This is a DML statement used to modify or change some or all of the values in an existing row of a table.
- *updates all rows*

```
update tbl_dept  
set d_name='power';
```

- *update only one row*

```
update tbl_depts  
set d_id= d_id+10, d_name='Structure'  
where d_name='computer';
```

Delete Command

❑ This is also a DML statement used to remove row(s) of a table.

➤ delete all records from table.

```
Delete from tbl_depts
```

➤ delete selected records from table.

```
Delete from tbl_depts  
where d_id>5;
```

Data Retrieval

- ❑ To retrieve the information stored in the tables.

```
SELECT *  
FROM tbl_students
```

```
SELECT s_id, s_name, s_dept  
FROM tbl_students
```

- ❑ Filtering with where clause

```
SELECT s_id,s_name  
FROM tbl_students  
Where s_dept=1
```

- ❑ Distinct

```
SELECT distinct s_dept  
FROM tbl_students
```


Data Retrieval

- Range Searching using BETWEEN – AND operator

```
SELECT s_id, s_name  
FROM tbl_students  
Where s_dept between 1 and 3
```

```
SELECT s_id, s_name  
FROM tbl_students  
Where s_dept = 1 or  
       s_dept = 2 or  
       s_dept = 3
```

```
SELECT * FROM salesorder  
WHERE orderdate BETWEEN '01/01/2005' AND  
       '06/30/2008'
```

Data Retrieval

- **IN predicate** searches for an exact match from a list.

```
SELECT s_id, s_name  
FROM tbl_students  
Where s_dept in (1,7,8)
```

```
SELECT s_id, s_name  
FROM tbl_students  
Where s_dept = 1 or  
       s_dept = 7 or  
       s_dept = 8
```

- **NOT IN predicate** searches for an not exact not match from a list.

```
SELECT s_id, s_name  
FROM tbl_students  
Where s_dept in (1,7,8)
```

```
SELECT s_id, s_name  
FROM tbl_students  
Where s_dept != 1 and  
       s_dept != 7 and  
       s_dept != 8
```

Data Retrieval

- **Pattern Matching Using LIKE**

Description	SQL wildcard	Example
Multiple characters	%	'A%'
Single character	_	'_mangalore'
Any character within []	[]	'[AO]%'
Not Any character within []	[^]	'[^AO]%'

- List all employees whose name start with 'A'

```
SELECT ename FROM emp  
WHERE ename LIKE 'A%'
```

- List all employees whose third character in name 'i'

```
SELECT ename FROM emp  
WHERE ename LIKE '__i%'
```

Data Retrieval

□ Top Rows

```
SELECT top 10 * FROM tbl_students
```

```
SELECT top 1 Percent FROM tbl_students
```

□ Order by Clause

```
SELECT *  
FROM tbl_students  
WHERE s_dept=1  
Order by s_name desc
```

```
SELECT top 10 *  
FROM tbl_students  
WHERE s_dept=1  
Order by s_name desc
```

Retrieving Identity

❑ SCOPE_IDENTITY()

- *Same session and the same scope.*

❑ @@IDENTITY

- *Same session and across any scope.*

❑ IDENT_CURRENT('TableName')

- *specify table across any table and any scope.*



Thank You